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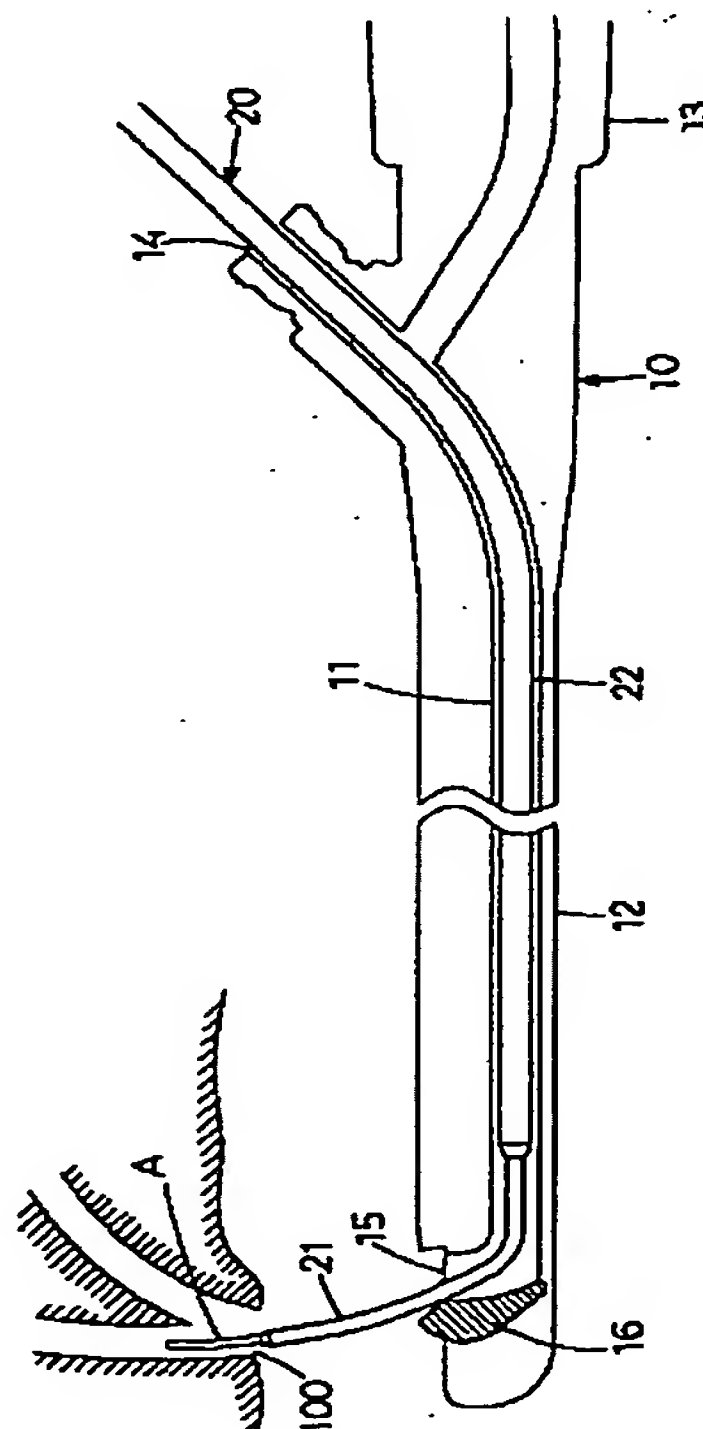
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(54)【発明の名称】 ベビースコープの挿入部可撓管

(57)【要約】

【課題】 膵胆管等への挿入部の外径を十分に細く形成することができ、しかも誘導操作に必要な十分な追従性と、腰折れ等に対する強度を得ることができるベビースコープの挿入部可撓管を提供すること。

【解決手段】 マザースコープ10の処置具挿通チャンネル11の先端出口15から突出される先側挿入部可撓管21を、可撓性のある棒状部材に軸線と平行方向に複数の貫通孔が穿設されたマルチルーメンチューブ21aによって形成すると共に、先側挿入部可撓管21の基端に連結されてマザースコープ10の処置具挿通チャンネル11の先端出口15から突出されない元側挿入部可撓管22を、螺旋管22a、22bの外面に網状管22cを被覆し、さらにその外面に可撓性外皮22dを被覆して形成した。



【特許請求の範囲】

【請求項1】マザースコープの処置具挿通チャンネルに挿通されて、対物光学系が内蔵された先端部分が上記マザースコープの処置具挿通チャンネルの先端出口から突出されるベビースコープの挿入部可撓管において、

上記マザースコープの処置具挿通チャンネルの先端出口から突出される先側挿入部可撓管を、可撓性のある棒状部材に軸線と平行方向に複数の貫通孔が穿設されたマルチルーメンチューブによって形成すると共に、上記先側挿入部可撓管の基端に連結されて上記マザースコープの処置具挿通チャンネルの先端出口から突出されない元側挿入部可撓管を、螺旋管の外面に網状管を被覆し、さらにその外面に可撓性外皮を被覆して形成したことを特徴とするベビースコープの挿入部可撓管。

【請求項2】上記先側挿入部可撓管の外径が、上記元側挿入部可撓管の外径より細く形成されている請求項1記載のベビースコープの挿入部可撓管。

【請求項3】上記先側挿入部可撓管の最先端部分の外径が、その先側挿入部可撓管の他の部分の外径より細く形成されている請求項1記載のベビースコープの挿入部可撓管。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】この発明は、いわゆる親子式内視鏡のマザースコープの処置具挿通チャンネルに挿通して使用されるベビースコープの挿入部可撓管に関する。

【0002】

【従来の技術】人体の膵胆管の内部の内視鏡観察を行うには、まず太いマザースコープを十二指腸まで挿入したあと、そのマザースコープの処置具挿通チャンネルにベビースコープを挿入する。

【0003】そして、マザースコープの処置具挿通チャンネルの先端出口から突出されるベビースコープの先端部分を膵胆管等に挿入することによって、ベビースコープの観察光学系で膵胆管の内部を観察することができる。

【0004】そのようなベビースコープの挿入部可撓管は、従来は、螺旋管の外面に網状管を被覆し、さらにその外面に可撓性外皮を被覆して形成されていた。

【0005】

【発明が解決しようとする課題】しかし、そのように螺旋管と網状管と外皮の3層構造にしてその内部に光学繊維束など必要な内蔵物を挿通配置すると、挿入部可撓管の外径が太くなって（例えば2mm以上）、そのまま膵胆管内に挿入することができず、膵胆管の入口であるファーター氏乳頭を切開しなければならない場合が少なかった。

【0006】しかし、そのような乳頭切開を行うには非常に高度の技術を要するだけでなく、狭窄のない正常な

乳頭をその奥の部分の検査を行うために切開してしまうのは、患者の健康面からも好ましいことではない。

【0007】そこで、挿入部可撓管を単なる可撓性チューブで形成したものもあるが、薄肉のチューブは追従性が乏しいので誘導性が悪く、且つ腰折れし易いので破損しがちである等の欠点がある。

【0008】そこで本発明は、膵胆管等への挿入部の外径を十分に細く形成することができ、しかも誘導操作に必要な十分な追従性と、腰折れ等に対する強度を得ることができるベビースコープの挿入部可撓管を提供することを目的とする。

【0009】

【課題を解決するための手段】上記の目的を達成するため、本発明のベビースコープの挿入部可撓管は、マザースコープの処置具挿通チャンネルに挿通されて、対物光学系が内蔵された先端部分が上記マザースコープの処置具挿通チャンネルの先端出口から突出されるベビースコープの挿入部可撓管において、上記マザースコープの処置具挿通チャンネルの先端出口から突出される先側挿入部可撓管を、可撓性のある棒状部材に軸線と平行方向に複数の貫通孔が穿設されたマルチルーメンチューブによって形成すると共に、上記先側挿入部可撓管の基端に連結されて上記マザースコープの処置具挿通チャンネルの先端出口から突出されない元側挿入部可撓管を、螺旋管の外面に網状管を被覆しさらにその外面に可撓性外皮を被覆して形成したことを特徴とする。

【0010】なお、上記先側挿入部可撓管の外径を、上記元側挿入部可撓管の外径より細く形成するとよく、上記先側挿入部可撓管の最先端部分の外径を、その先側挿入部可撓管の他の部分の外径より細く形成してもよい。

【0011】

【発明の実施の形態】図面を参照して本発明の実施の形態を説明する。図1は、マザースコープ10の処置具挿通チャンネル11にベビースコープ20が挿通された状態を示している。

【0012】処置具挿通チャンネル11は、マザースコープ10の挿入部可撓管12内に全長にわたって挿通配置されており、その入口14は、挿入部可撓管12とその基端に連結された操作部13との連結部付近に突設されている。

【0013】また、処置具挿通チャンネル11の先端出口15は、挿入部の最先端部分に側方に向いて開口しており、その内側には、操作部13からの遠隔操作によって揺動操作される処置具起上台16が配置されている。

【0014】マザースコープ10の処置具挿通チャンネル11内に通されるベビースコープ20の挿入部可撓管は、先端出口15から突出される先側挿入部可撓管21の基端に、先端出口15から突出されずに処置具挿通チャンネル11に残る元側挿入部可撓管22を連結して構成されている。

【0015】図2にも示されるように、先側挿入部可撓管21は元側挿入部可撓管22より外径が細く形成されていて、先側挿入部可撓管21の最先端部分Aは、さらに先側挿入部可撓管21の他の部分より外径が細く形成されている。

【0016】図3はベビースコープ20の全体構成を示しており、元側挿入部可撓管22の基端には操作部23が連結されており、接眼部24が操作部23から突出して設けられている。

【0017】先側挿入部可撓管21の先端部内には、図示されていない観察光学系の対物レンズ等が内蔵されていて、挿入部可撓管21、22内に挿通配置されたイメージガイドファイババンドルを介して、観察像が接眼部24に伝達される。被写体を照明するための照明光は、挿入部可撓管21、22内に挿通配置されたライトガイドファイバを介して伝達される。

【0018】先側挿入部可撓管21は、図4に示されるように、例えばシリコンゴム等のように弾力性と可撓性のある一本の棒状部材に複数の貫通孔が軸線と平行方向に穿設されたいわゆるマルチルーメンチューブ21aによって形成されている。

【0019】そして、貫通孔の一つは処置具挿通孔25として用いられ、他の貫通孔には、イメージガイドファイババンドル26及びライトガイドファイバ27が挿通されている。先側挿入部可撓管21の最先端部分Aは、このマルチルーメンチューブ21aの外径を削ぎ落として細く形成されている。

【0020】元側挿入部可撓管22は、図5に示されるように、金属帯材を一定の径で螺旋状に巻いた第1の螺旋管22aと、それと逆方向に巻いた第2の螺旋管22bとを密着して二重に配置し、その外周に金属細線又は非金属細線を編組した網状管22cを被覆し、さらにその外周に可撓性のある合成樹脂材からなる外皮22dを被覆して形成されている。28は、先端側がマルチルーメンチューブ21aの処置具挿通孔25に接続された処置具挿通チャンネルである。

【0021】このように構成されたベビースコープの挿入部可撓管においては、マザースコープ10の処置具挿通チャンネル11の先端出口15から突出される先側挿入部可撓管21は、単純な構造のマルチルーメンチューブ21aによって形成されているので、外径を非常に細く（例えば2mm未満に）且つ柔軟に形成することができる。また、その最先端部分Aをさらに細く形成しておけば、ファーター氏乳頭100等への挿入がより容易になる。

【0022】そして、処置具挿通チャンネル11内にそ

の先端の処置具起上台16の近傍まで挿入される元側挿入部可撓管22は、螺旋管22a、22bの外面に網状管22cを被覆しさらにその外面に可撓性外皮22dを被覆して形成して形成されているので、先側挿入部可撓管21より太くなるが、追従性に富み、腰折れ強度も十分に強くすることができる。

【0023】したがって、マザースコープ10の処置具挿通チャンネル11の入口14側において、ベビースコープ20の元側挿入部可撓管22を振じったり押し込んだりすると、その運動が、先端出口15から突出される先側挿入部可撓管21に良く伝達されて、ファーター氏乳頭100内に容易に誘導、挿入させることができる。

【0024】

【発明の効果】本発明によれば、マザースコープの処置具挿通チャンネルの先端出口から突出されるベビースコープの先側挿入部可撓管を、管軸方向に複数の貫通孔が穿設されたマルチルーメンチューブによって形成したことにより、その外径を臍胆管等に挿入し易い寸法まで十分に細く形成することができ、しかも、マザースコープの処置具挿通チャンネルの先端出口から突出されないベビースコープの元側挿入部可撓管を、螺旋管の外面に網状管を被覆し、さらにその外面に可撓性外皮を被覆して形成したことにより、誘導操作に必要な十分な追従性と、腰折れ等に対する強度を確保することができる。

【図面の簡単な説明】

【図1】本発明の実施の形態のベビースコープがマザースコープの処置具挿通チャンネル内に挿通された状態の略示断面図である。

【図2】本発明の実施の形態のベビースコープの挿入部の先端側部分の側面図である。

【図3】本発明の実施の形態のベビースコープの全体側面図である。

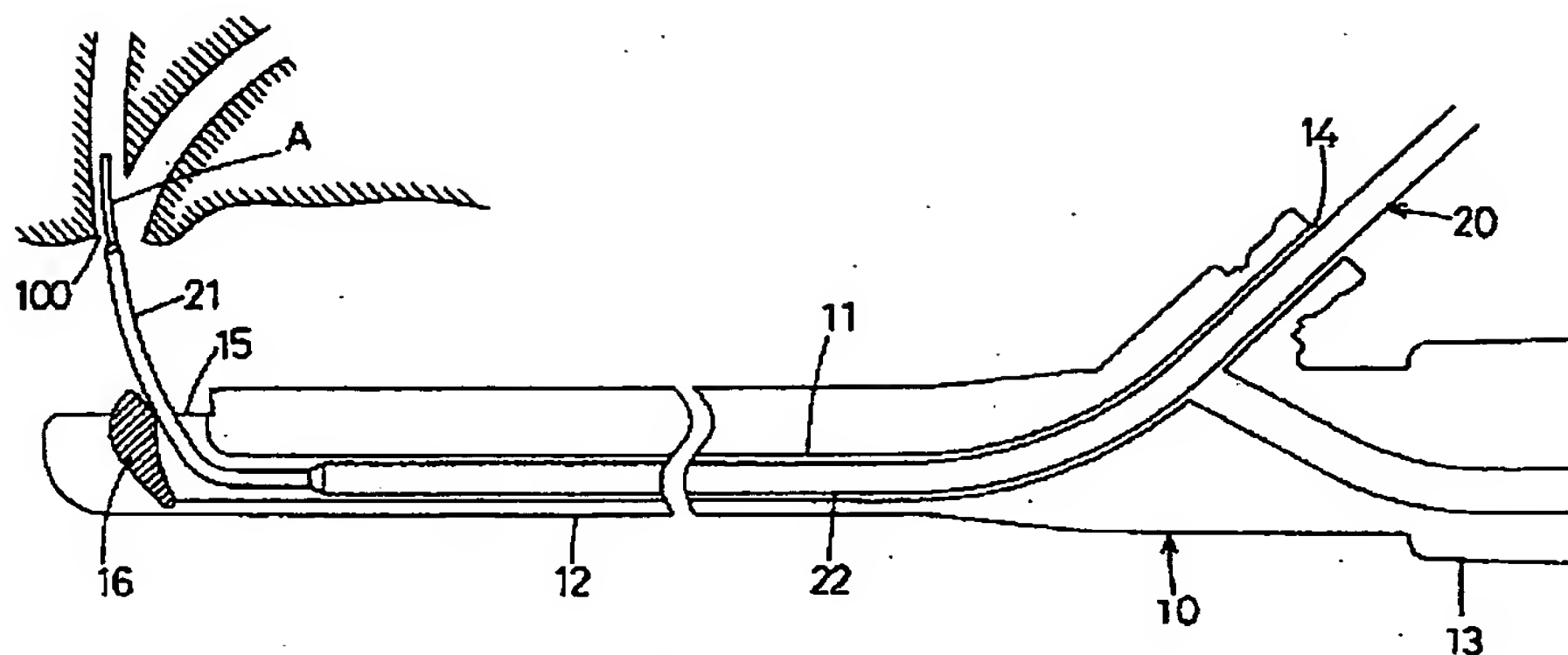
【図4】本発明の実施の形態のベビースコープの先側挿入部可撓管の正面断面図である。

【図5】本発明の実施の形態のベビースコープの元側挿入部可撓管の側面断面図である。

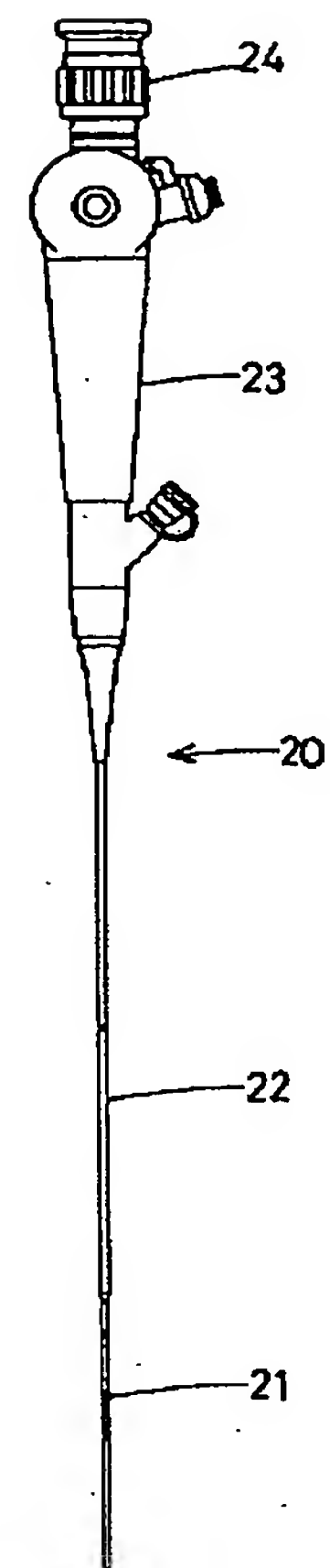
【符号の説明】

- 10 マザースコープ
- 11 処置具挿通チャンネル
- 15 先端出口
- 20 ベビースコープ
- 21 先側挿入部可撓管
- 21a マルチルーメンチューブ
- 22 元側挿入部可撓管
- 22a, 22b 螺旋管
- 22c 網状管
- 22d 外皮

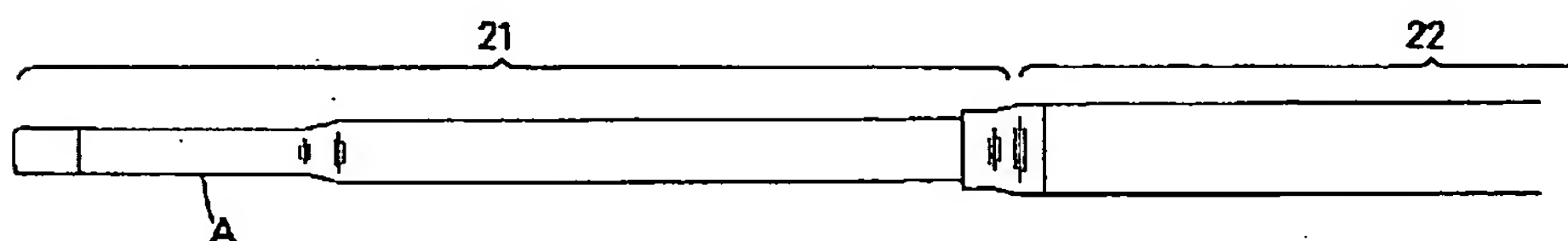
【図 1】



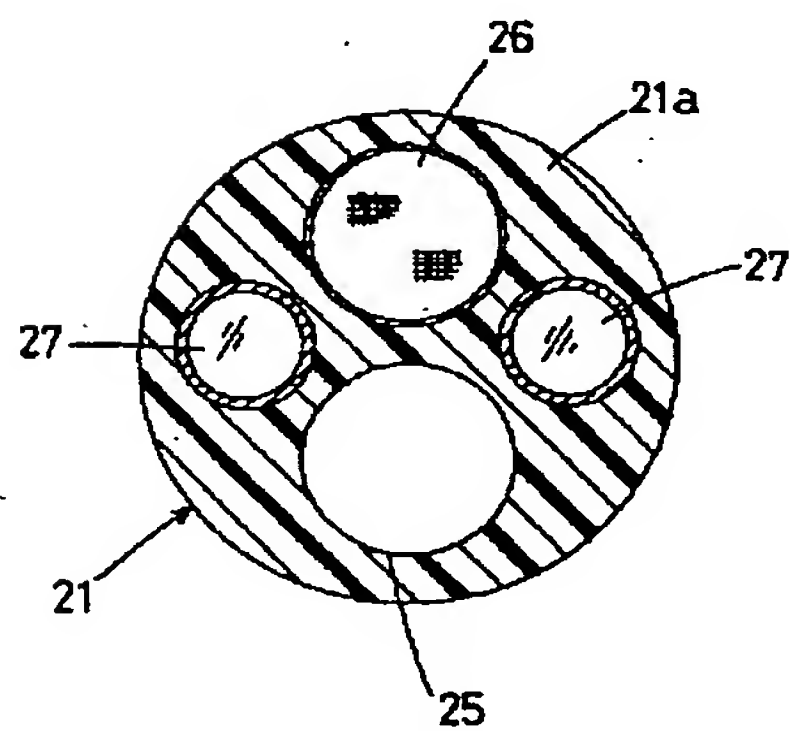
【図 3】



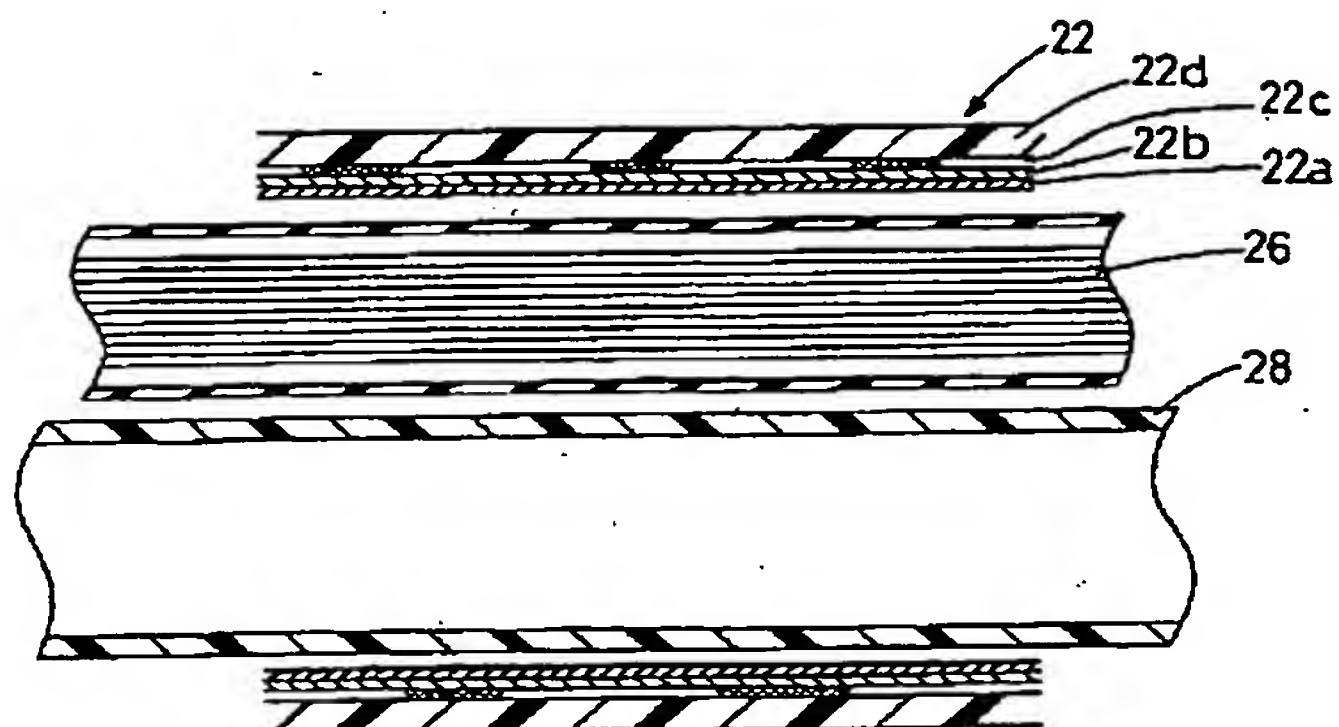
【図 2】



【図 4】



【図 5】



PATENT ABSTRACTS OF JAPAN

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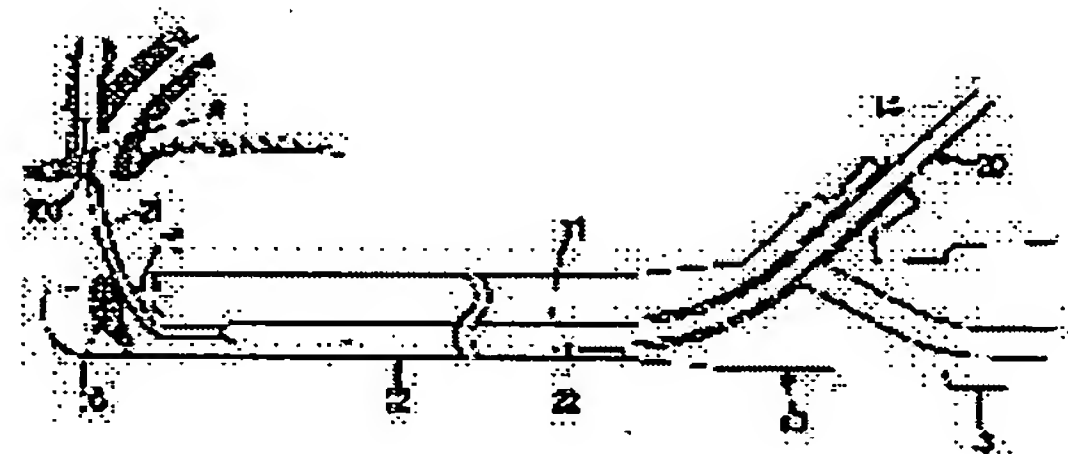
(72)Inventor : SUGIYAMA AKIRA

(54) INSERTION PART FLEXIBLE PIPE OF BABY SCOPE

(57)Abstract:

PROBLEM TO BE SOLVED: To provide the insertion part flexible pipe of a baby scope which is formable sufficiently fine in the outside diameter of the insertion part to the bile duct of the pancreas, etc., and with which the sufficient follow-up characteristic necessary for guiding operation and the strength to stiffness, etc., are obtainable.

SOLUTION: The front side insertion part flexible pipe 21 projected from the front end outlet 15 of a treating implement insertion channel 11 of a mother scope 10 is formed of a multilumen tube 21a formed by boring a flexible bar-shaped member with plural through-holes in a direction parallel with its axial line. The operator side insertion part flexible pipe 22 which is connected to the base end of the front side insertion part flexible pipe 21 and is not projected from the front end outlet 15 of a treating implement insertion channel 11 of the mother scope 10 is formed by covering the outside surfaces of spiral pipes 22a, 22b with a net-like pipe 22c and, further, covering the outside surface thereof with a flexible sheath 22d.



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CLAIMS

[Claim(s)]

[Claim 1] In the insertion section flexible tube of a baby scope with which a part for the point in which it was inserted in the treatment implement insertion channel of a mother scope, and object optical system was built is projected from the tip outlet of the treatment implement insertion channel of the above-mentioned mother scope While forming the drawer back insertion section flexible tube projected from the tip outlet of the treatment implement insertion channel of the above-mentioned mother scope with the multi-lumen tube with which two or more through tubes were drilled in the axis and the parallel direction by the cylindrical member with flexibility The origin side insertion section flexible tube which is connected with the end face of the above-mentioned drawer back insertion section flexible tube, and is not projected from the tip outlet of the treatment implement insertion channel of the above-mentioned mother scope The insertion section flexible tube of the baby scope characterized by having covered reticulated tubing on the external surface of a helical traveling wave tube, and covering and forming a flexible envelope in the external surface further.

[Claim 2] The insertion section flexible tube of a baby scope according to claim 1 with which the outer diameter of the above-mentioned drawer back insertion section flexible tube is formed more thinly than the outer diameter of the above-mentioned origin side insertion section flexible tube.

[Claim 3] The insertion section flexible tube of a baby scope according to claim 1 with which the outer diameter of the latest part of the above-mentioned drawer back insertion section flexible tube is formed more thinly than the outer diameter of other parts of the drawer back insertion section flexible tube.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the insertion section flexible tube of the baby scope used inserting in the treatment implement insertion channel of the so-called mother scope of a parent-and-child type endoscope.

[0002]

[Description of the Prior Art] A baby scope is inserted in the treatment implement insertion channel of the mother scope after inserting a thick mother scope to the duodenum first, in order to perform endoscope observation inside the pancreas bile duct of the body.

[0003] And the interior of a pancreas bile duct is observable by the observation optical system of a baby scope by inserting in a pancreas bile duct etc. a part for the point of the baby scope projected from the tip outlet of the treatment implement insertion channel of a mother scope.

[0004] Conventionally, such an insertion section flexible tube of a baby scope covered reticulated tubing on the external surface of a helical traveling wave tube, further, covered the flexible envelope on the external surface, and was formed in it.

[0005]

[Problem(s) to be Solved by the Invention] However, when it was made the three-tiered structure of a helical traveling wave tube, reticulated tubing, and an envelope such and insertion arrangement of the required built-in objects, such as an optical-fiber bundle, was carried out to the interior, there were not few cases where the outer diameter of an insertion section flexible tube had to become thick (for example, 2mm or more), and it could not insert into a pancreas bile duct as it is, but the FATA Mr. mammary papilla which is the inlet port of a pancreas bile duct had to be cut open.

[0006] However, it is not desirable from a patient's health side for performing such a papillotomy, it not only to require a very advanced technique, but to cut normal mammary papilla without a constriction open in order to inspect the part of the back.

[0007] then, although there are some which formed the insertion section flexible tube by the mere flexible tube, since the tube of thin meat has bad inductivity since flattery nature is scarce, and it tends to collapse, it tends to be damaged — it comes out and there is a fault, such as being.

[0008] Then, this invention can form thinly enough the outer diameter of the insertion section to a pancreas bile duct etc., and aims at offering the insertion section flexible tube of the baby scope which can moreover obtain sufficient flattery nature required for induction actuation, and the reinforcement to a buckling etc.

[0009]

[Means for Solving the Problem] In order to attain the above-mentioned purpose, the insertion section flexible tube of the baby scope of this invention In the insertion section flexible tube of a baby scope with which a part for the point in which it was inserted in the treatment implement insertion channel of a mother scope, and object optical system was built is projected from the tip outlet of the treatment implement insertion channel of the above-mentioned mother scope While forming the drawer back insertion section flexible tube projected from the tip outlet of the

treatment implement insertion channel of the above-mentioned mother scope with the multi-lumen tube with which two or more through tubes were drilled in the axis and the parallel direction by the cylindrical member with flexibility Reticulated tubing is covered for the origin side insertion section flexible tube which is connected with the end face of the above-mentioned drawer back insertion section flexible tube, and is not projected from the tip outlet of the treatment implement insertion channel of the above-mentioned mother scope on the external surface of a helicol traveling wave tube, and it is characterized by covering and forming a flexible envelope in the external surface further.

[0010] In addition, it is good to form more thinly than the outer diameter of the above-mentioned origin side insertion section flexible tube the outer diameter of the above-mentioned drawer back insertion section flexible tube, and the outer diameter of the latest part of the above-mentioned drawer back insertion section flexible tube may be formed more thinly than the outer diameter of other parts of the drawer back insertion section flexible tube.

[0011]

[Embodiment of the Invention] The gestalt of operation of this invention is explained with reference to a drawing. Drawing 1 shows the condition that the baby scope 20 was inserted in the treatment implement insertion channel 11 of the mother scope 10.

[0012] Insertion arrangement of the treatment implement insertion channel 11 is carried out covering the overall length into the insertion section flexible tube 12 of the mother scope 10, and the inlet port 14 protrudes near the connection section with the control unit 13 connected with the insertion section flexible tube 12 and its end face.

[0013] Moreover, opening of the tip outlet 15 of the treatment implement insertion channel 11 is carried out to the latest part of the insertion section toward the side, and treatment implement ***** 16 rocking actuation is carried out [the *****] by the remote operation from a control unit 13 is arranged at the inside.

[0014] The insertion section flexible tube of the baby scope 20 which it lets pass in the treatment implement insertion channel 11 of the mother scope 10 connects the origin side insertion section flexible tube 22 which remains in the treatment implement insertion channel 11, without projecting from the tip outlet 15 with the end face of the drawer back insertion section flexible tube 21 projected from the tip outlet 15, and is constituted.

[0015] As shown also in drawing 2, the outer diameter is thinly formed from the origin side insertion section flexible tube 22, and, as for the drawer back insertion section flexible tube 21, the outer diameter is further formed thinly from other parts of the drawer back insertion section flexible tube 21, as for the latest part A of the drawer back insertion section flexible tube 21.

[0016] Drawing 3 shows the whole baby scope 20 configuration, the control unit 23 is connected with the end face of the origin side insertion section flexible tube 22, and from the control unit 23, an eye contacting part 24 projects and is prepared.

[0017] In the point of the drawer back insertion section flexible tube 21, the objective lens of the observation optical system which is not illustrated etc. is built in, and an observation image is transmitted to an eye contacting part 24 through the insertion section flexible tube 21 and the image guide fiber bundle by which insertion arrangement was carried out into 22. The illumination light for illuminating a photographic subject is transmitted through the light guide fiber by which insertion arrangement was carried out in the insertion section flexible tube 21 and 22.

[0018] The drawer back insertion section flexible tube 21 is formed in one cylindrical member which has resiliency and flexibility like silicone rubber of the so-called multi-lumen tube 21a by which two or more through tubes were drilled in the axis and the parallel direction, as shown in drawing 4.

[0019] And one of the through tubes is used as a treatment implement insertion hole 25, and the image guide fiber bundle 26 and the light guide fiber 27 are inserted in other through tubes. the latest part A of the drawer back insertion section flexible tube 21 — the outer diameter of this multi-lumen tube 21a — ***** — it is formed thinly.

[0020] 1st helicol traveling wave tube 22a which rolled metal band material spirally with the fixed path as the origin side insertion section flexible tube 22 was shown in drawing 5, It and 2nd helicol traveling wave tube 22b wound around hard flow are stuck, it arranges to a duplex,

reticulated tubing 22c which carried out the braid of a metal thin line or the nonmetal thin line to the periphery is covered, 22d of envelopes which consist of synthetic-resin material which has flexibility in the periphery further is covered, and it is formed. 28 is the treatment implement insertion channel by which the tip side was connected to the treatment implement insertion hole 25 of multi-lumen tube 21a.

[0021] Thus, since the drawer back insertion section flexible tube 21 projected from the tip outlet 15 of the treatment implement insertion channel 11 of the mother scope 10 is formed of multi-lumen tube 21a of simple structure, it can form an outer diameter very thinly (to for example, less than 2mm), and flexibly, and can be made to insert it in FATA Mr. mammary-papilla 100 grade easily in the insertion section flexible tube of the constituted baby scope. Moreover, if the latest part A of the is formed still more thinly, insertion in FATA Mr. mammary-papilla 100 grade will become easier.

[0022] And although it becomes thicker than the drawer back insertion section flexible tube 21 since the origin side insertion section flexible tube 22 inserted to near treatment implement ***** 16 at the tip into the treatment implement insertion channel 11 covers reticulated tubing 22c on the external surface of helicoid traveling wave tubes 22a and 22b, 22d of flexible envelopes is further covered on the external surface, it forms and it is formed, it can be rich in flattery nature, and buckling reinforcement is also strong enough and it can carry out.

[0023] Therefore, if twist the origin side insertion section flexible tube 22 of the baby scope 20, it pushes in or it turns on the inlet-port 14 side of the treatment implement insertion channel 11 of the mother scope 10, the movement is well transmitted to the drawer back insertion section flexible tube 21 projected from the tip outlet 15, and it can guide and can be made to insert easily into the FATA Mr. mammary papilla 100.

[0024]

[Effect of the Invention] By having formed the drawer back insertion section flexible tube of the baby scope projected from the tip outlet of the treatment implement insertion channel of a mother scope with the multi-lumen tube with which two or more through tubes were drilled in the direction of a tube axis according to this invention It can form thinly enough to the dimension which is easy to insert the outer diameter in a pancreas bile duct etc. And by having covered reticulated tubing for the origin side insertion section flexible tube of the baby scope which is not projected from the tip outlet of the treatment implement insertion channel of a mother scope on the external surface of a helicoid traveling wave tube, and having covered and formed the flexible envelope in the external surface further Sufficient flattery nature required for induction actuation and the reinforcement to a buckling etc. are securable.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] The baby scope of the gestalt of operation of this invention is a sketch sectional view in the condition of having been inserted in in the treatment implement insertion channel of a mother scope.

[Drawing 2] It is the side elevation for a tip flank of the insertion section of the baby scope of the gestalt of operation of this invention.

[Drawing 3] It is the whole baby scope side elevation of the gestalt of operation of this invention.

[Drawing 4] It is the transverse-plane sectional view of the drawer back insertion section flexible tube of the baby scope of the gestalt of operation of this invention.

[Drawing 5] It is the side-face sectional view of the origin side insertion section flexible tube of the baby scope of the gestalt of operation of this invention.

[Description of Notations]

10 Mother Scope

11 Treatment Implement Insertion Channel

15 Tip Outlet

20 Baby Scope

21 Drawer Back Insertion Section Flexible Tube

21a Multi-lumen tube

22 Origin Side Insertion Section Flexible Tube

22a, 22b Helical traveling wave tube

22c Reticulated tubing

22d Envelope

[Translation done.]

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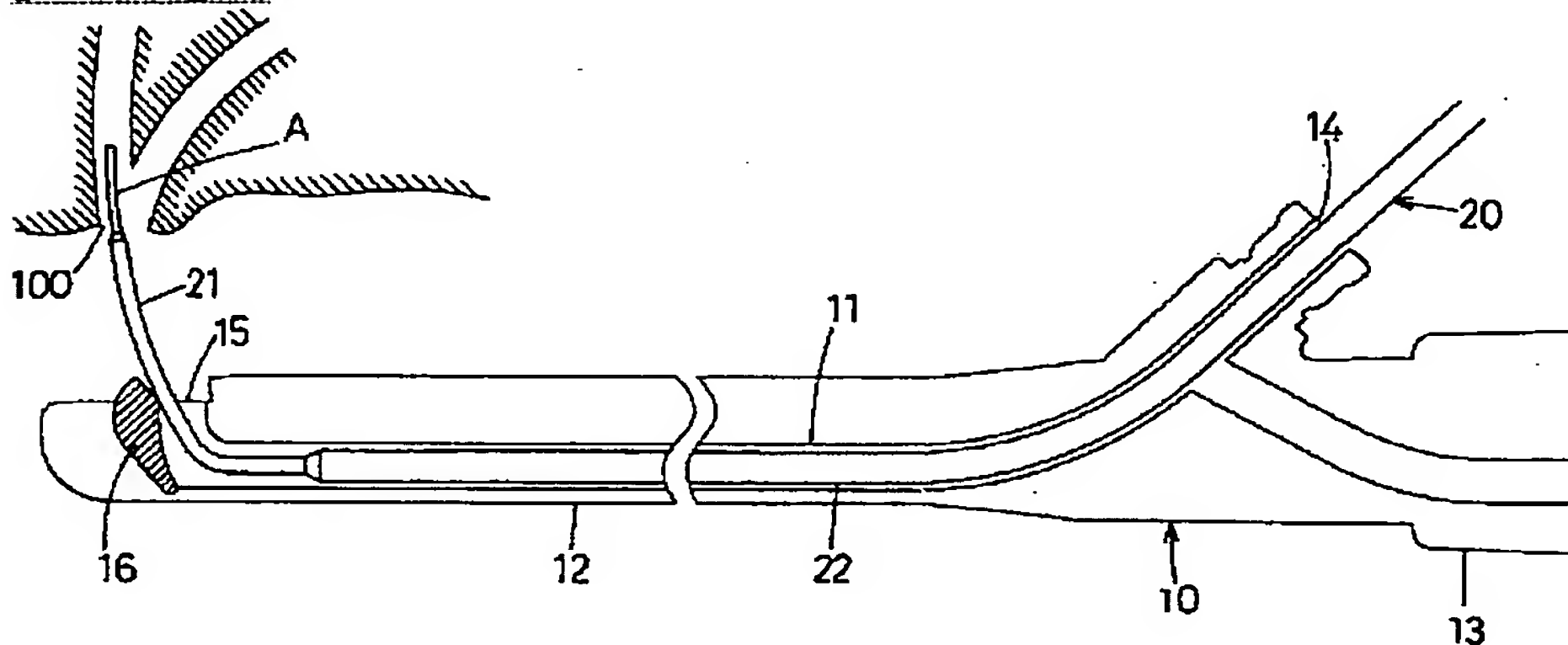
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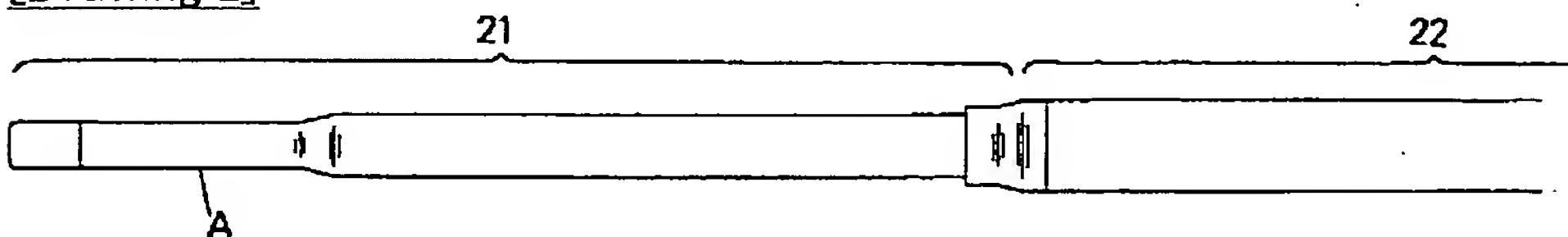
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DRAWINGS

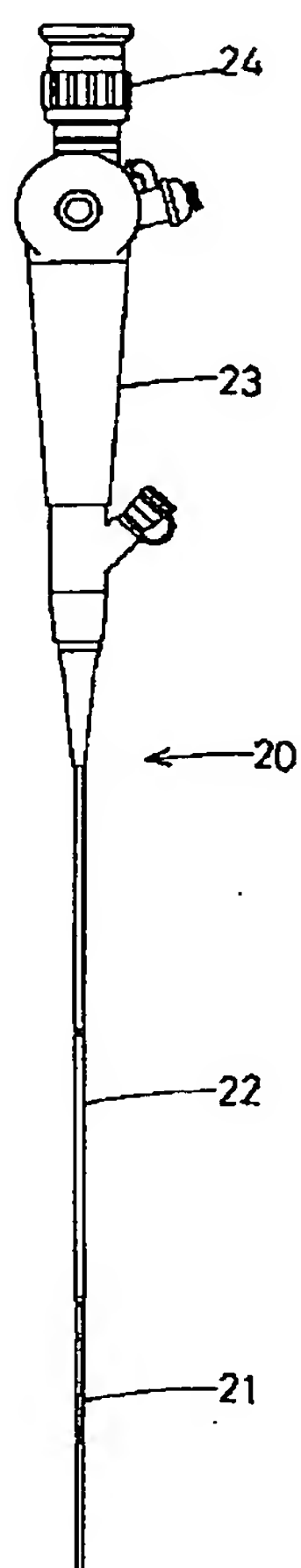
[Drawing 1]



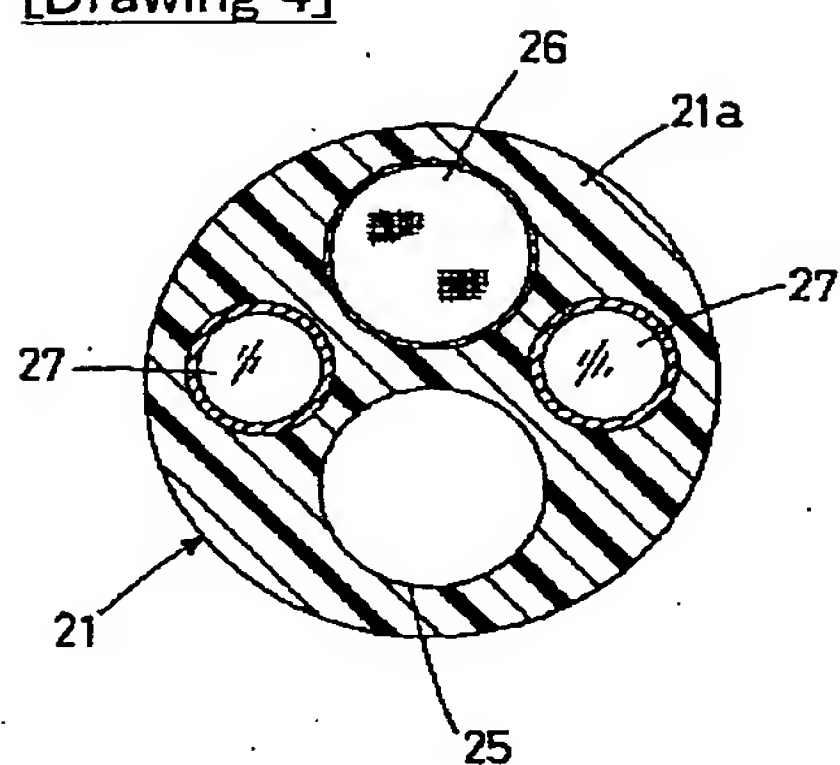
[Drawing 2]



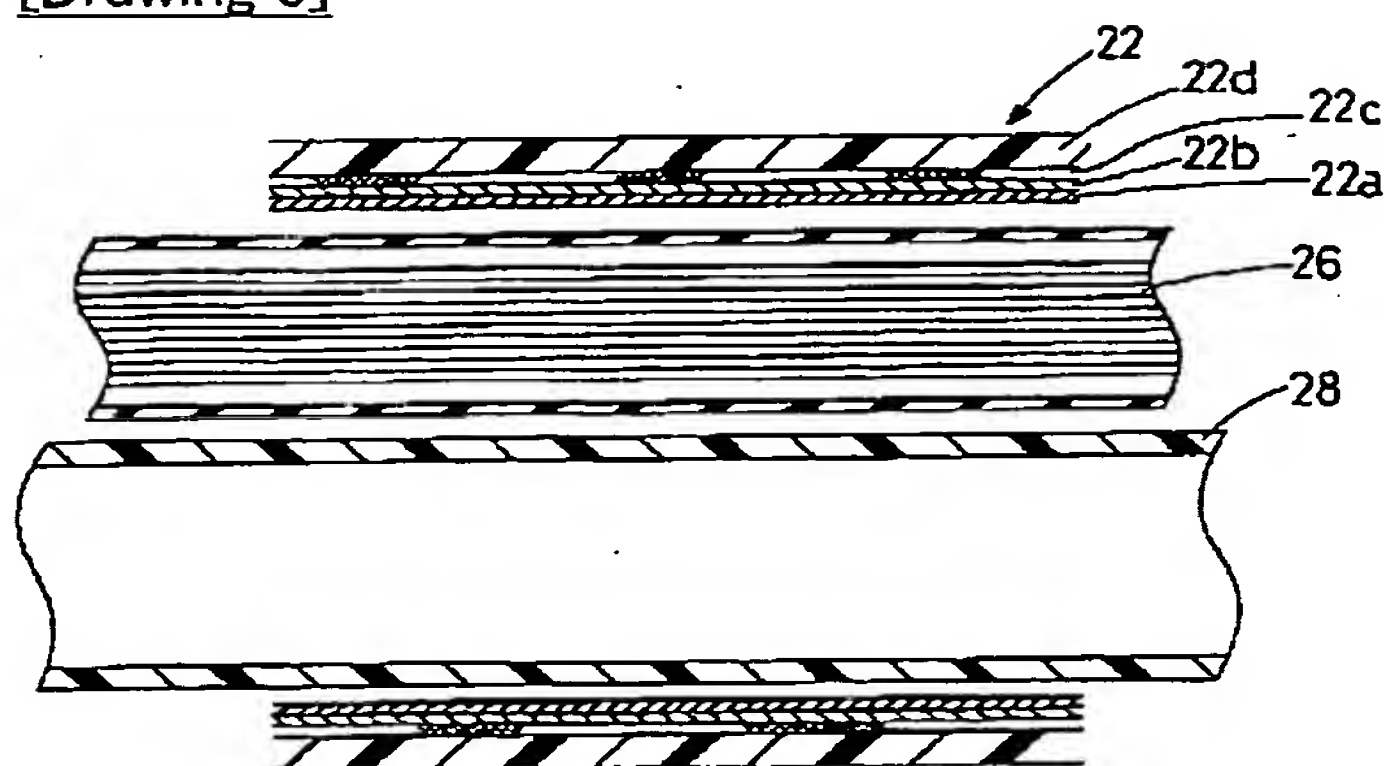
[Drawing 3]



[Drawing 4]



[Drawing 5]



[Translation done.]